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An Empirical Study of Critical Factors of Electronic Banking Adoption for Banking Sector in Palestine

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Abstract

This research paper aims to analyze a questionnaire survey to find out the determinants of adapting e-banking that are absolutely critical for successful implementation in banking sector in Palestine. Out of a possible list of 18 names of banks with more than 200 branches, 1000 bank's customers were targeted, with 900 usable questionnaires returned, thus giving a response rate of 90 percent. The research led to the development of a criticality e-banking determinants structure, comprising 37 determinants sorted in descending order of criticality through three tiers. The growth of electronic commerce (EC) derived from the advances in information and communication technology (ICT) has significant effects on daily activities of people. The experts involved in this area try to adopt the related technology for facilitating the every-day activities of industry and service organizations that involve the communication with their clients to overcome the limitations of time and place with lowest expenses.

Keywords: electronic banking (e-banking), electronic banking adoption, intention-based theories, Palestine

1. Introduction

The growth of electronic commerce (EC) derived from the advances in information and communication technology (ICT) has significant effects on daily activities of people. The experts involved in this area try to adopt the related technology for facilitating the every-day activities of industry and service organizations that involve the communication with their clients to overcome the limitations of time and place with lowest expenses. As a result of implementing ICT and adopting EC on organizations' and peoples' affairs, the nation's economic growth is positively influenced. Several studies such as [Jorgenson \(2002\)](#), [Dedrick et al \(2003\)](#), [Kim \(2004\)](#), [Melville et al \(2004\)](#), [Maitah et al \(2014\)](#) and [Ramayah \(2005\)](#) reveal that postponing technology implementation and adoption will negatively affects per capita income, work experience and productivity.

In developing countries ICT output gains are mainly obtained through the activities of the ICT sector, rather than using ICT. The development of ICT sector has an important role on employment both in the same sector and in contiguous and supporting industries. The ICT sector long-drawn-out as organizations started to adopt technology to augment automation levels and reduce costs. The emergence and continuous growing of social networking and Web 2.0 firms alongside with the rising status of smart phones and technology smart applications continue to force the development of the industry ([Peña-López, 2011](#)).

The banking sector in Palestine is young compared to many developing countries. Banking sector in Palestine is managed by Palestinian Monetary Authority (PMA) as it is the promising Central Bank of Palestine. The formation of PMA was in 1994 by presidential decree as an independent institution and later by an act of the Palestine Legislative Council PMA Law Number (2) of 1997 which outlined the full authority and autonomy of the PMA (PMA, 2014), where it was established to ensure the stability and effectiveness of the Palestinian financial system (PMA, 2014). According to PMA (2014), there are 18 commercial banks operating in the country, with a network of more than two hundred branches and delegate offices. There are eight local banks that include two Islamic banks and ten foreign banks that encompass of eight Jordanian banks, one Egyptian bank and one branch for the HSBC. Two of the banks in service in Palestine are Islamic and the residual are commercial non-Islamic banks.

The increasingly evolving of competition between banks, more informed customers, rapidly changing technologies and increasingly innovation driven work environment, in addition to the fact that the business environment is increasingly characterized by instability and uncertainty triggers the banking needs for continuous performance enhancement in an innovative way, as a necessity issue. So for the bank to be competitive, it must adopt flexibility into its operations, and to increase its performance it must adopt the new trends of ICT such as e-banking services. The adoption of e-banking programs must be involved within different functions of banking activities and oriented toward exceeding the customers' and stakeholders' requirements.

1.1 Problem Statement

Palestine's ICT sector has grown in the last two decades, enabled by the availability of related infrastructure such as computers, broadband, software, maintenance and widely internet access. This infrastructure is necessary for preparing e-banking sector as a driver for building a high tech competitive banking market. Building a Palestinian competitive high tech banking sector is necessary to enable these banks to market their services regionally and internationally. But the problem here is that Palestinian banking sector is not at the level of quality in terms of e-banking services needed to compete other banks in the region, making these banks in Palestine lack the appropriate competitive advantage (White et al., 2012). Our study emerged from this point of view, where we need to highlight the factors influencing the adopting e-banking services at banking sector in Palestine. Effective adopting of e-banking practices will raise the quality level of banking sector in Palestine and enabling this sector to compete regionally.

1.2 Importance of the Problem

As consequences of the vital role e-banking programs are playing in banking performance enhancement, banks have to adopt the best e-banking practices. This study aims to investigate the factors that influence users' acceptance of e-banking in Palestine, by analyzing educated customers from the Palestinian population, where we contribute to e-banking adoption by providing empirical data investigating on e-banking factors that work in banking sector in Palestine from the customers view point.

1.3 Literature Review

Various theories have emerged to clarify a superior understanding of the factors that drive the adoption of information systems (IS) such as e-banking adoption (Taylor and Todd, 1995). One of these important theories is intention-based theories, which developed factors of users' behavioral intentions for IS adoption. The mainly recognized theoretical models that explain the relationship between user beliefs, attitudes, and intentions are Theory of Reasoned Action (TRA –Fishbein and Ajzen, 1975), Technology Acceptance Model (TAM – [Davis, 1989](#)) and Theory of Planned Behavior (TPB – Ajzen, 1991). TAM proposes that there is a relation between the attitudes of users towards IS adopting and the two main determinants of the attitudes which are perceived usefulness or perceived relative enhancement in users' job performance, and perceived ease of use, where TAM was intended to forecast information technology acceptance and use on the occupation ([Davis, 1989](#); [Al-Gahtani and King, 1999](#)). TPB is more dominated toward the perceived behavioral control, in other words focused on the perceived ease or difficulty of performing the behavior. TAM and TPB were stemmed from TRA, which states that beliefs influence attitudes and lead to intentions and as a result generate behaviors. TRA states that attitude towards performing behavior and subjective norms as social pressures to carry out behavior are considered as the main influencers of behavior. Unified Theory of Acceptance and Use of Technology (UTAUT) that explains as much as 70% of the variance in intention provides an inclusive assessment of eight well-known models (Venkatesh et al. 2003). These eight models are TRA, TAM, Motivational Model (MM – Davis et al. 1992), TPB which is a mixture model combining factors from TAM and TPB (C-TAM-TPB – Taylor and Todd, 1995), Innovation Diffusion Theory (IDT – Moore and Benbasat, 1996), Social Cognitive Theory (SCT – Compeau and Higgins, 1995), and Model of PC Utilization (MPCU – Thompson et al. 1991). The UTAUT model proposes that four constructs proceed as determinants of behavioral intentions and use behavior: (i) performance anticipation, (ii) effort anticipation, (iii) social influence, and (iv) facilitating conditions. In addition, UTAUT also posits the role of four key moderator variables: gender, age, experience, and voluntariness of use. As we see UTAUT completes the principles of TAM with two more factors (in addition to perceived ease of use and perceived usefulness): social influence and facilitating conditions. Previous studies also declare the effects of four constructs of UTAUT on users' behavioral intention ([Carlsson et al., 2006](#); [Maitah et al., 2015](#); [Mansaray et al., 2015](#); [Park et al., 2007](#)).

1.3.1 Perceived Ease of use

According to [Davis et al. \(1989\)](#), ease of use is the extent to which a user willing to use the system with no effort. It reveals user perception of the degree of difficulty to use e-banking. According to UTAUT, effort expectancy

positively affects performance expectancy (Venkatesh et al., 2003), where as users experience that e-banking is effortless to use, where they will have good willing to acquire the expected performance.

Otherwise, their performance expectancy will be low. Perceived usefulness and ease of use that underpins the adoption of a technology determines the likely long-term use of a technology, as well (Guriting and Ndubisi, 2006; Ignatius and Ramayah, 2005; Ramayah, 2005, 2006a,b, 2004; Ramayah et al., 2005). The impact of ease of use on behavioral intention is affected by attitude toward behavior (Taylor and Todd, 1995), in addition, users of technology intend to minimize their behavioral effort (Venkatesh 2000). An intrinsic motivation affects the user-friendliness of a service positively toward consumers' intention to use an electronic service even without a positive attitude toward the service itself, where intrinsic motivation refers to the pleasure of doing an activity (Venkatesh, 2000). Wessels and Drennan (2010) consider adopting e-banking system for ease of use vitally important for affecting the attitude. Perceived usefulness affects the external factors that exercise influences ahead the perceived ease of use (Brown, 2002). Banks should consider the negative effects of difficult usage of e-banking interfaces to develop a user friendly e-banking system (Zhou et al., 2010).

1.3.2 Social Influence

It is defined as to what extent an individual perceives the perspective of others believe as an important issue to use the new system (Venkatesh et al., 2003). Objects of social influence encounter the effect of people important to the behavior of user on the adoption of e-banking. Traditional banks can benefit from the experience of earlier adopters of e-banking, whose insights and opinions may generate positive word-of-mouth influences on successive adoption behavior (Wiedemann et al., 2008). Publication of such certificates and get a superstar agreement will help to promote user adoption.

1.3.3 Facilitating Conditions

Facilitating conditions reflect the effect of a user's knowledge and ability (Venkatesh et al., 2003). E-banking requires users to possess confident skills such as using electronic services. In addition, users need to bear usage costs such as data service and transaction fees when using e-banking. Users have to possess necessary financial resources such as transaction fees and operational skills, to be able to adopt e-banking.

1.3.4 Perceived Cost of Use

The price of achieving and using technology is one instrument that has been used as an argument for the adoption of e-banking to various users, where it is considered as a barrier of adopting new technologies (Hung et al., 2003; Kleijnen et al., 2004; Wu and Wang, 2005; Dahlberg et al., 2008;). On the other hand, low costs of using e-banking services can persuade customers to use e-banking (Sathye, 1999). A number of world-class organizations do employ technology-costing measures as an indication of e-banking usage intention, as the higher is the costs of using a new technology (i.e. e-banking), the less will be its use. (Hong et al., 2008; Kuo & Yen, 2009; Wessels and Drennan, 2010).

1.3.5 Credibility

Credibility is the starting point for entering the trust ability of a system and its ability in applying transactions, where the extent to which an individual who uses e-banking services believes on having no privacy or security threats determines the level of creditability (Wang et al., 2003; Erdem and Swait, 2004); the ongoing journey towards e-banking adoption must deliver the appropriate credibility on the ingredient of financial service provider to reveal the fear of users of transferring their money and personal information to a third party (Luarn and Lin, 2005). Many banks consider credibility as an important step in the implementation process of e-banking adoption, lowering the risk associated with it and increasing the willingness of people to use it. (Luarn and Lin, 2005; Wang et al., 2006; Koenig-Lewis et al., 2010).

1.3.6 Perceived Risk

perceived risk is related to the context of physical, financial, , psychological, or social risks involved in online transactions (Forsythe & Shi, 2003; Im et al., 2008). The emphasis on perceived risk is an important determinant of e-banking adoption (Laforet and Li., 2005; Yang, 2009; Ndubisi and Sinti, 2006; Tan et al., 2009; Hanafizadeh et al., 2014). The highest percentages of the adoption of technology-enabled service scores relate to customer attitude and satisfaction occur when the risk of using it is low (Lovelock et al., 2001; Wu and Wang, 2005; Wessels and Drennan, 2010). Customer perceived self-efficacy as a core component of perceived risk should play a central role in the sustainability of a new technology (Ellen et al., 1991; Agarwal and Karahanna, 2000).

1.3.7 Personal Interaction

To achieve individual interaction, there is a need to emphasize the importance of managing personal contact

during the usage of personal services as the first step to understand the process of e-banking adoption ([Dabholkar, 1992, 1996; Al Hinai, 2009](#)).

1.3.8 Quality of the Internet Connection

An important effective driver for any Internet-based application is the quality of the Internet connection (i.e. speed and continuity). The Internet was introduced in Palestine and is controlled by the . Palestine Telecommunications Company (Paltel) works in many communication fields such as fixed telephones, leased lines, and VPNs. Paltel provides Internet services with high speeds by using leased lines and fiber optics technology (**Annual Report, 2012, Paltel**). Broadband solutions are offered by several companies in Palestine such as ADSL, Voice over IP (VOIP), Internet via microwave and others. (Ministry of Telecom & Information Technology, 2011). According to Sathye (1999), Internet access is one of the determinants that affect the adoption of online banking, where the lack of an appropriate Internet connection makes the use of online banking not achievable. There is a noteworthy relationship between the speed of Internet access and the employ of online banking services (Almogbil's, 2005).

1.3.9 Resistance to Change

Customers' resistance to change from traditional ways of doing banking activities to online banking has been highlighted in different studies (Sathye, 1999; Inquiry, 1997). Customers may not be willing to change their recent traditions of doing operations, unless they feel to fulfill their needs, as customers do not have the intention with high level of sluggishness to transfer their traditional banking activities to electronic ones (Daniel, 1999; Nov and Ye, 2008; [Laukkanen et al. 2009](#); [Rizzuto et al., 2014](#)).

1.3.10 Trust

Trust can be defined as the company's confidence in the sincerity of its business partner and involvement of the factors related to this perception ([Ganesan, 1994](#); [Geyskens et al., 1998](#); [Das and Teng, 2001](#)). One of the important factors of e-commerce development is Consumers' trust in their electronic transactions ([Yousafzai et al., 2003](#)). Avoiding perceived risk leads to trust where these factors are considered as key barriers to adopting online services ([Featherman and Pavlou, 2003](#); [Gefenet et al., 2003](#); [Lee and Turban, 2001](#); [Jiang et al., 2013](#); [Liu et al., 2008](#), [Jain et al., 2013](#)). As online banking transactions contain sensitive information and involve access to critical files through the Internet within the financial transactions, trust is more important in online banking than offline one ([Alsajjan and Dennis, 2006](#); [Luo et al., 2010](#); [Suh and Han, 2002](#)). Customers' trust need to be accumulated by the long term, and there is a need to be aware of the perceived risks by the customers as a way to identify the obstacles facing the adoption of e-banking to be able to overcome them. For the bank to augment customers trust, the bank have to protect their customers' privacy and personal information, in other words the bank has to adopt the needed processes to be able to detect fraud and information theft so as to avoid them, and secure transactions.

In what follows, Section 2 discusses the method of the study. In section 3, we illustrate the study results. In section 4, we discuss the research findings. Section 5 concludes our research.

2. Method

2.1 The Study

According to the literature review we find out factors and according to them we constructed the questionnaire as it is seen in Table No. 1 and it is targeting the customers of all banks in Palestine. The main aim of this research is to analyze the factors of e-banking in bank sector in Palestine. The model proposed is shown in Figure 1. The Palestinian case represented by 1000 customers. The questionnaire was built to measure the importance of e-banking according to different factors. We divided them to critical factors, important and minor.

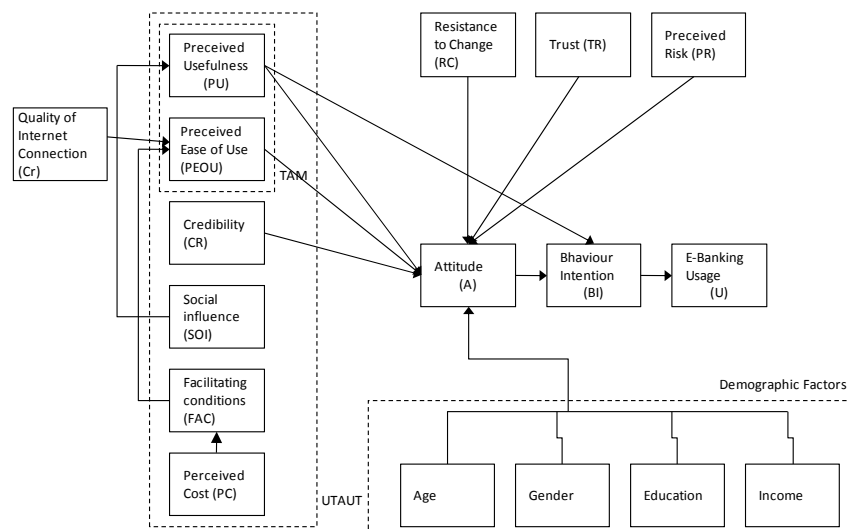


Figure 1. Proposed conceptual research model depending on TAM and UTAUT

Table 1. Constructs and questions included in the questionnaire

Construct	Item	Measurement	References
Perceived usefulness (PU)	PU1	E-banking is useful.	Karahanna and Straub (1999), Hung et al. (2003), Venkatesh et al. (2003), and Wu and Wang (2005), Davis(1989),Venkatesh and Davis (2000), Tan and Teo (2000), Wangetal(2003), Wang et al (2006), Chiu (2005), Nysveen et al (2005), SundarrajandWu(2005), Lee (2009), Hanafizadeh et al (2014), Santouridis and Kyritsi (2014)
	PU2	E-banking improves payment efficiency.	
	PU3	E-banking encompasses a number of products and services under its ambit which include ATM, debit/credit cards, phone/mobile banking and PC/Internet banking etc.	
	PU4	E-banking is compatible to modern lifestyle.	
Perceived ease of use (PEOU)	PEOU1	Learning to use e-banking services is very simple.	Karahanna and Straub (1999), Teo and Pok (2003) Venkatesh et al. (2003), and Wu and Wang (2005) Davis(1989),Venkatesh and Davis (1996, 2000), Tan and Teo (2000),Wangetal(2003), Wang et al (2006), Chiu (2005), Nysveen et al (2005),SundarrajandWu(2005) Poon (2008), Lee (2009), Tan et al. (2009), Hussin and Noor (2005), Hanafizadeh et al (2014), Santouridis and Kyritsi (2014)
	PEOU2	Interaction with e-banking site is clear and understandable.	
Perceived cost (PC)	PC1	Using internet for e-banking is expensive such as internet charge.	Hung et al. (2003), Luarn and Lin (2005), and Wu and Wang (2005), Zhao <i>et al.</i> (2008) Poon (2008), Tan et al. (2009), Hanafizadeh et al (2014)
	PC2	The current Internet tariff is still high.	
	PC3	E-banking is free of cost service.	
Social influence (SOI)	SOI1	Using e-banking is affected by personal recommendation from e-banking users.	Venkatesh et al. (2003)
	SOI2	People who are important to me or influence my behavior think that I should use e-banking.	
	SOI3	When trying new technology, I trust my own instinct more than advice from others.	
Facilitating conditions (FAC)	FAC1	The availability of the necessary resources and knowledge to use e-banking.	Venkatesh et al. (2003)
	FAC2	There will be professionals to help in resolving any difficulty of using e-banking.	
Quality of Internet connection (QI)	QI1	Access to the Internet is easy.	
	QI2	The Internet enables to handle online financial transactions accurately and completely.	
	QI3	The Internet enables customers to access the bank's website 7/24.	
Security Risk (SR)	SR1	Not feeling safe in performing transactions over the e-banking.	Chiu (2005), Poon (2008), Lee (2009), Tan et al. (2009) Hussin and Noor (2005), Hanafizadeh et al (2014)

Privacy Risk (PR)	SR2	Not feeling totally safe given that personal privacy information over the e-banking.	
	SR3	Not perceiving the information relating to user and e-banking transactions as secure.	
	SR4	Using e-banking may expose to fraud or monetary loss.	
	PR1	While using e-banking, my username and passwords information will not be safe from unauthorized third parties.	Zhao <i>et al.</i> (2008), Poon (2008), Lee (2009)
Performance Risk (PRR)	PR2	There is a possibility of outflow of my personal information, when I use e-banking.	
	PRR1	E-banking services are not capable enough to perform banking transactions.	Zhao <i>et al.</i> (2008)
	PRR2	E-banking service does not provide any better service as compared to traditional banking service.	
Credibility (CR)	PRR3	Use of internet banking will decrease my ability to control over my financial matters.	
	CR1	Online bank has enough specialists to detect fraud and information theft.	Wangetal(2003), Wang et al (2006), Hanafizadeh et al (2014), Santouridis and Kyritsi (2014)
	CR2	Online bank would not sell personal information to third parties.	
	CR3	Current password generation is secure.	
Trust (TR)	CR4	No money will be lost in unauthorized electronic fund transfers.	
	TR1	The e-banking website is trustworthy.	Hanafizadeh et al (2014), Santouridis and Kyritsi (2014)
	TR2	E-banking website keeps its promises and commitments.	
Resistance to change (RC)	TR3	E-banking website keeps customers' best concern.	
	RC1	Being Interested on new information technology developments.	Zhao <i>et al.</i> (2008), Poon (2008)
	RC2	Information technology developments have improved our lives.	
Personal Interaction (PI) Attitude (A)	RC3	Being comfortable in using e-banking services for handling financial activities.	
	PI1	I prefer direct personal interaction on handling my banking services rather than using e-banking services.	Karahanna and Straub (1999), Wangetal(2003)
	A1	Using e-banking services is a good idea.	Taylor and Todd (1995), Teo and Pok (2003), and Hung et al. (2003)
	A2	Using e-banking value-added services to help in performing financial activities information is a good idea.	
Behavioral intention (BI)	A3	Being not satisfied with using traditional banking services when performing financial activities.	
	A4	Encouraging the use of e-banking among social group.	
	BI1	I plan to use e-banking services in the future.	Taylor and Todd (1995), Karahanna and Straub (1999), Wangetal(2003), Santouridis and Kyritsi (2014)
	BI2	If possible, I will try to use e-banking value-added services.	
	BI3	I will strongly recommend others to use e-banking.	

2.2 Participant Characteristics, Response Rate and Customers Breakdown

Having the total banks in Palestine targeted (land area is 6,170 km², 130 km long and 40-65 km in width), it was decided right from the beginning to cover customers of all banks in Palestine to gain 100 % response rate. A total of 900 proper questionnaires were received correctly, achieving the 90 % response rate that was fixed at the outset. The 1000 customers aimed in this research represent the customers for all banks in Palestine. The breakdown of these banks represents a heterogeneous mixture, where 44.4 % are Palestinian, 44.4 % Jordanian and 11.1 percent foreigners. The demographic issues were specified in terms of customers' age, gender, education and income.

2.3 Measures and Covariates

Three-point ordinal scale was used in the study survey as a level of measurement with three classifications critical, important, and minor. Numbers of 1, 2, and 3 respectively were assigned for the three levels of importance critical, important and minor categories. The data which imply frequency distribution allow the patterns of the responses to be examined and described. (Weisberg, 1992). In our investigation study we used frequency distribution as an appropriate measure for the data organization where it allows the summarization of the responses distribution for a variable by calculating the typical value which is the point of central tendency, and in this way we can measure the spread of this typical value (Carlson and Thorne, 1997). This method of investigation is we need realize the proper recognition of compromise mathematical comparison of e-banking

adoption variables. For the three-point scale which is used in this research, there are only 3 possible levels of value. When respondents devote an e-banking factor the same grade (1, 2, 3) then we will get a zero value of the range, as the maximum and minimum scores will be the same. Discrepancy ratio is the percentage of responses that do not drop into the modal category. It is a fitting measure of spread for the ordinal data that we have in this study. Variation ratio (VR) is calculated as follows:

$VR = 1 - \text{Frequency distribution of the mode.}$

Variation ratio has to be calculated to demonstrate the degree of agreement on objective foundation in specifying an e-banking factor as critical. A value of zero will mean agreement for e-banking adoption factor as critical. Values of 0.5 or less mean bulk agreement, values of more than 0.5 point to no majority agreement in scoring an e-banking factor as critical. Although, the variation ratio doesn't consider a complete circulation of responses. The index of variety is declared as a distribution measure depending on a percentage of responses in each group (Weisberg, 1992). Index of distribution is illustrated mathematically as:

$$\text{Index of distribution} = 1 - (p_1^2 + p_2^2 + \dots + p_k^2).$$

Where p_k = the proportion of responses in category k and k is the number of categories.

This distribution index declares the focus degree of responses in a few large groups as squaring magnitude that highlight the large proportion, more than small values (Weisberg, 1992). Therefore in this perspective, the index of diversity can be proposed as a substitute measure of conformity between respondents taking into account the response distribution of each of the e-banking adoption factors. A low index value illustrates common conformity on the importance of an e-banking factor.

3. Results

3.1 Statistics and Data Analysis

This research shows that the response distributions of the e-banking adoption factors include only two possible kinds of ranges, which are one and two. These results are shown in Table 2, which summarizes the groups of the e-banking adoption factors by the variety values. It is obvious from this grouping of the e-banking factors that banks customers practically recognize the significance of the e-banking adoption factors with various modes. This finding is compatible with the literature, which shows that the level of prominence on most of e-banking adoption determinants practically varies specially in developing countries. As shown in Tables 1 and 2, an objective evaluation of the proposition of the retort model is illustrated. The e-banking adoption factors with a range value of one were revealed as critical showing that these 14 e-banking factors force the successful implementation of e-banking practices. The residual 30 e-banking factors with two range value, illustrate that some respondents returned these factors as of small significance. From these e-banking factors, the bulk agreement returned three factors (CR2, RC1 and BI3) as important and four e-banking factors (SOI3, PRR1, PRR2 and PRR3) as of slight significance. For that it will be normal not to analyze these seven e-banking factors and to deal with them as unimportant e-banking factors in the implementation of e-banking practices in the banking sector in Palestine. This complies with the literature review. This places of interest for the need for adopting the e-banking adoption factors in requisites of their significance.

3.2 Ancillary Analyses and Participant Flow

All of the e-banking adoption factors response distributions are unimodal leading to the suitable prove of the use of mode as the compute of innermost trend for this level of examination. Unimodal declares that the majority commonly occurring responses come into view on one group, shown as a single peak in the bar charts which represent the response distribution of each of the 44 e-banking adoption factors. A sum of 40 e-banking factors was stacked on critical and important groups, while four e-banking factors were returned as of minor importance by the enormous bulk of the respondents. These factors are related to performance risk e-banking initiatives. In addition from the social point of view bank customers in Palestinian context are affected by the others in their attitude of using new technology, where social influences are highly apparent in Palestinian society as for developing countries. Therefore, these three kinds of groups are recognized (critical, important and minor significance). These modal groups are shown in Table 1.

Table 2. Group e-banking adoption factors by range value

Range value	No. of factors	E-banking adoption factors	Group
1	14	PU1, PU2, PU3, PU4, PEOU1, PEOU2, PC3, SR1, SR2,SR3,SR4, PR1, PR2, CR4	Critical
2	30	PC1, PC2, SOI1, SOI2, SOI3, FAC1, FAC2, QI1, QI2, QI3, PRR1, PRR2, PRR3, CR1, CR2, CR3, TR1, TR2, TR3, RC1, RC2, RC3, PI1, A1, A2, A3, A4, BI1, BI2, BI3	Critical, important, minor importance

4. Discussion

4.1 Variation Ratio and the Variation Index

Using this helps for separating the e-banking adoption determinants with bulk agreement from other e-banking determinants with no bulk agreement as apparent by some customers as of no result to the success or failure of the execution practices of e-banking adoption. The variety index illustrates the level of focus of customers in a few large groups. Table 3 declares the calculated variation ratio and the variety index for the 37 e-banking determinants which are returned by customers as critical. Table 3 declares that the variety index values hold up the degree of conformity recognized by the variation ratio. This is obvious since the value of the variety index did not accomplish the maximum value of 66.7%. This illustrates concurrence among the customers' respondents regarding the criticality of these e-banking factors. On the other hand, the variation ratio values recognized 37 e-banking factors to encompass bulk agreement, as those factors have variation ratio value of 0.5 or a smaller amount, and the quality factors with two level of no bulk agreement, that have variation ratio values more than 0.5. As a result, embody the basics to construct the confirmed constitution of the critical e-banking adoption factors.

Table 3. Variation ratio and the index of variety

No.	E-banking adoption factor	Variation ratio	Index of variety
1	PU1	0.111	0.201
2	PU3	0.126	0.287
3	PU4	0.127	0.223
4	PU2	0.167	0.225
5	PEOU1	0.211	0.354
6	SR4	0.220	0.366
7	PEOU2	0.221	0.368
8	SR1	0.232	0.380
9	SR3	0.237	0.387
10	SR2	0.250	0.404
11	PR2	0.326	0.490
12	CR4	0.329	0.487
13	PC3	0.331	0.490
14	PR1	0.332	0.498
15	QI2	0.374	0.535
16	SOI1	0.389	0.549
17	FAC2	0.409	0.566
18	SOI2	0.410	0.567
19	PI1	0.437	0.586
20	FAC1	0.437	0.587
21	PC1	0.442	0.591
22	QI1	0.443	0.592
23	QI3	0.447	0.594
24	CR3	0.457	0.578
25	A3	0.462	0.582
26	A2	0.493	0.602
27	TR3	0.498	0.618
28	A1	0.520*	0.604

29	CR1	0.521*	0.620
30	TR2	0.522*	0.629
31	PC2	0.550*	0.638
32	TR1	0.553*	0.640
33	A4	0.556*	0.608
34	RC2	0.563*	0.642
35	BI1	0.568*	0.638
36	BI2	0.580*	0.635
37	RC3	0.586*	0.647

*Represents no majority consensus.

4.2 Conformity of the Recognized Critical E-Banking Adoption Factors

By using the variation ratio and the variety, an objective finding in the procedure of ordering and conforming the critical e-banking adoption factors is supplemented, precisely as the mode declared in the identification of these e-banking adoption factors.

Conformation of the e-banking factor, consequently, declares the recognized e-banking factors, considering their effect level in the successful execution of e-banking adoption implementing prioritization procedure of these e-banking adoption factors with respect to their apparent criticality. Table 4 shows the e-banking adoption factors ranked in a descending order of their variation ratio and the range of these factors. These factors are of two folds from bank customers point of view, that is one fold for factors of positive influence and other fold of negative influence for e-banking adoption. Some of these factors positively affect e-banking adoption such as perceived usefulness, so as to augment them, others negatively affect the e-banking adoption such as security risk, so as to realize the vision of the bank customers that they can be overcome. In what follows, we illustrate the criterion to be used in the conformation procedure.

Table 4. E-banking adoption factors clusters

No.	E-banking adoption factor		Variation ratio	Confirmation into tier
	Range = 1	Range = 2		
1	PU1		0.111	1
2	PU3		0.126	1
3	PU4		0.127	1
4	PU2		0.167	1
5	PEOU1		0.211	1
6	SR4		0.220	1
7	PEOU2		0.221	1
8	SR1		0.232	1
9	SR3		0.237	1
10	SR2		0.250	1
11	PR2		0.326	1
12	CR4		0.329	1
13	PC3		0.331	1
14	PR1		0.332	1
15		QI2	0.374	2
16		SOI1	0.389	2
17		FAC2	0.409	2
18		SOI2	0.410	2
19		PI1	0.437	2
20		FAC1	0.437	2
21		PC1	0.442	2
22		QI1	0.443	2
23		QI3	0.447	2
24		CR3	0.457	2
25		A3	0.462	2

26	A2	0.493	2
27	TR3	0.498	2
28	A1	0.520	3
29	CR1	0.521	3
30	TR2	0.522	3
31	PC2	0.550	3
32	TR1	0.553	3
33	A4	0.556	3
34	RC2	0.563	3
35	BI1	0.568	3
36	BI2	0.580	3
37	RC3	0.586	3

4. Conclusion

The analysis of the results shows that about 27 out of 37 of the findings reveals that about 27 out of 37 critical e-banking adoption factors proved in this research share most of the values covered by the main principles espoused by related previous studies, as follows:

- Perceived usefulness as the bank customers are attracted and motivated to adopt e-banking services to handle their banking transactions, when they feel that these services are beneficial for them such as improving their payment efficiency, encompassing a number of useful products and services under its ambit which include ATM, debit/credit cards, phone/mobile banking and PC/Internet banking etc and e-banking compatible to modern lifestyle.
- Designing and developing the e-banking products, tools and web systems to be easy to use, so as the interaction with e-banking site is clear and understandable.
- Overcoming the security risk issues which are exposed to bank customers perception, so as fearing feelings of not feeling safe in performing transactions over the e-banking, being exposed to fraud or monetary loss in using e-banking services, not perceiving the information relating to user and e-banking transactions as secure and not feeling totally safe given that personal privacy information over the e-banking are resolved.
- Overcoming the performance risk issues to resolve the bank customers fearing feelings for a possibility of outflow of personal information or username and passwords information, when using e-banking services.
- Assuring the creditability of e-banking services, so as no money will be lost in unauthorized electronic fund transfers.
- Producing E-banking services as free of cost.

There is a need for banks to develop systems for quantifying the main factors that influence the method the bank adds value using e-banking services to customers. In addition develop a system using tools such as dash boards for measuring key indicators of the level of perceived security and performance risk that encounter e-banking system.

References

- Agarwal, R., & Karahanna, E. (2000). Time flies when you're having fun: cognitive absorption and beliefs about information technology usage. *MIS Quarterly*, 24, 665–694.
- Al-Gahtani, S. (2001). The applicability of TAM outside North America: an empirical test in the United Kingdom. *Information Resources Management Journal*, 2, 37–46.
- Al-Gahtani, S. S. (2008). Testing for the applicability of the TAM model in the Arabic context: Exploring an extended TAM with three moderating factors. *Information Resources Management Journal (IRMJ)*, 21(4), 1-26.
- Al-Gahtani, S. S., & King, M. (1999). Attitudes, satisfaction and usage: factors contributing to each in the acceptance of information technology. *Behaviour & Information Technology*, 18(4), 277-297.
- Almogbil, A. (2005). Security, Perceptions, and Practices: challenges facing Adoption of Online Banking in Saudi. Unpublished Ph.D. Thesis, George Washington University, Washington.
- Alsajjan, B., & Dennis, C. (2006). The Impact of truston acceptance of online banking. European Association of Education and Research in Commercial Distribution, 27–30, June 2006, Brunel University, West

- London, United Kingdom.
- Annual Report. (2012). Paltel. Retrieved from <http://www.paltel.ps/admin/Upload/file/Annual-Report2012en.pdf>
- Brown, I. T. (2002). Individual and technological factors affecting perceived ease of use of web-based learning technologies in a developing country. *The Electronic Journal of Information Systems in Developing Countries*, 9.
- Carlsson, C., Carlsson, J., Hyvonen, K., Puhakainen, J., & Walden, P. (2006, January). Adoption of mobile devices/services—searching for answers with the UTAUT. In *System Sciences, 2006. HICSS'06. Proceedings of the 39th Annual Hawaii International Conference on* (Vol. 6, pp. 132a-132a). IEEE.
- Chen, H., Zeng, D., Atabakhsh, H., Wyzga, W., & Schroeder, J. (2003). COPLINK: Managing law enforcement data and knowledge. *Communications of the ACM*, 46(1), 28–34.
- Chiu, Y. B., Lin, C. P., & Tang, L. L. (2005). Gender differs: Assessing a model of online purchase intentions in e-tail service. *International Journal of Service Industry Management*, 16(5), 416–435.
- Curran, J. M., & Meuter, M. L. (2005). Self-service technology adoption: comparing three technologies. *Journal of Services Marketing* 19(2), 103–114.
- Dabholkar, P. (1992). Role of affect and need for interaction in on-site service encounters. In: Sherry, J.F., Sternthal, B. (Eds.), *Advances in Consumer Research*, Association for Consumer Research, Provo, UT, pp. 563–569.
- Dahlberg, T., Mallat, N., Ondrus, J., & Zmijewska, A. (2008). Past, present and future of mobile payments research: A literature review. *Electronic Commerce Research and Applications*, 7(2), 165–181.
- Das, T. K., & Teng, B. S. (2001). Trust, control, and risk in strategic alliances: An integrated framework. *Organization studies*, 22(2), 251-283.
- Davis, F. D. (1989). Perceived usefulness, perceive dease of use, and user acceptance of information technologies. *MIS Quarterly*, 13(3), 319-340.
- Dedrick, J., Gurbaxani, V., & Kraemer, K. L. (2003). Information technology and economic performance: A critical review of the empirical evidence. *ACM Computing surveys*, 35(1), 1-28.
- Delone, W. H. (2003). The DeLone and McLean model of information systems success: a ten-year update. *Journal of management information systems*, 19(4), 9-30.
- Díez, E., & McIntosh, B. S. (2009). A review of the factors which influence the use and usefulness of information systems. *Environmental Modelling & Software*, 24(5), 588-602.
- Dutta, S., & Mia, I. (2010). The global information technology report 2009–2010. In *World Economic Forum and INSEAD, SRO-Kundig Geneva, Switzerland*.
- Ellen, P. S., Bearden, W. O., & Sharma, S. (1991). Resistance to technological innovations: An examination of the role of self-efficacy and performance satisfaction. *Journal of the Academy of Marketing Science*, 19(4), 297–307.
- Erdem, T., & Swait, J. (2004). Brand credibility, brand consideration, and choice. *Journal of Consumer Research* 31(1), 191–198.
- Forsythe, S. M., & Shi, B. (2003). Consumer patronage and risk perceptions in internet shopping. *Journal of Business Research*, 56(11), 867–875.
- Ganesan, S. (1994). Determinants of long-term orientation in buyer-seller relationships. *The Journal of Marketing*, 1-19.
- Guriting, P., & Ndubisi, N. (2006). Borneo online banking: evaluating customer perceptions and behavioural intention. *Management Research News*, 29(1/2), 6–15.
- Hanafizadeh, P., Behboudi, M., Abedini Koshksaray, A., & Jalilvand Shirkhani Tabar, M. (2014). Mobile-banking adoption by Iranian bank clients. *Telematics and Informatics*, 31(1), 62-78.
- Hernandez, J. M. C., & Mazzon, J. A. (2007). Adoption of internet banking: proposition and implementation of an integrated methodology approach. *International Journal of Bank Marketing*, 25(2), 72-88.
- Hoehle, H., Scornavacca, E., & Huff, S. (2012). Three decades of research on consumer adoption and utilization of electronic banking channels: A literature analysis. *Decision Support Systems*, 54(1), 122-132.
- Hong, S. J., Thong, J. Y., Moon, J. Y., & Tam, K. Y. (2008). Understanding the behavior of mobile data services

- consumers. *Information Systems Frontiers*, 10(4), 431-445.
- Hung, S. Y., Ku, C. Y., & Chang, C. M. (2003). Critical factors of WAP services adoption: an empirical study. *Electronic Commerce Research and Applications*, 2(1), 42–60.
- Hussin, H., & Noor, R. M. (2005). Innovating business through e-commerce: Explore the willingness of Malaysian SMEs. *Proceedings of the 2nd International Conference on Innovations in Information Technology*, Dubai, UAE.
- Ignatius, J., & Ramayah, T. (2005). An empirical investigation of the course website acceptance model (CWAM). *International Journal of Business and Society*, 6(2), 69–82.
- Im, I., Kim, Y., & Han, H. J. (2008). The effects of perceived risk and technology type on users' acceptance of technologies. *Information and Management*, 45(1), 1–9.
- Inquiry, W. (1997). Financial System Inquiry Final Report.
- Jain, M., Khalil, S., Johnston, W. J., & Cheng, J. M. S. (2013). The performance implications of power–trust relationship: The moderating role of commitment in the supplier–retailer relationship. *Industrial Marketing Management*.
- Jiang, X., Li, M., Gao, S., Bao, Y., & Jiang, F. (2013). Managing knowledge leakage in strategic alliances: The effects of trust and formal contracts. *Industrial Marketing Management*, 42(6), 983–991.
- Jorgenson, D. W. (2002). Information technology and the US economy. *Economic Policy Issues of the New Economy*, 37-80.
- Kim, S. H. (2004). *Impacts of Information Technology on Productivity and Linkage of the US Economy* (Doctoral dissertation, University of Notre Dame).
- Kleijnen, M., de Ruyter, K., & Wetzels, M. (2004). Consumer adoption of wireless services: discovering the rules, while playing the game. *Journal of Interactive Marketing*, 18(2), 51–61.
- Koenig-Lewis, N., Palmer, A., & Moll, A. (2010). Predicting young consumers' take up of mobile banking services. *International Journal of Bank Marketing*, 28(5), 410–432.
- Kuo, Y. F., & Yen, S. N. (2009). Towards an understanding of the behavioral intention to use 3G mobile value-added services. *Computers in Human Behavior*, 25(1), 103-110.
- Laforet, L., & Li, X. (2005). Consumers' attitudes towards online and mobile banking in China. *International Journal of Bank Marketing*, 23(5), 362–380.
- Lassar, W. M., Manolis, C., & Lassar, S. S., (2005). The relationship between consumer innovativeness, personal characteristics, online banking adoption. *International Journal of Bank Marketing*, 23(2), 176-199.
- Laukkanen, T., Sinkkonen, S., & Laukkanen, P. (2009). Communication strategies to overcome functional and psychological resistance to internet banking. *International Journal of Information Management*, 29(2), 111-118.
- Lee, M. C. (2009). Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. *Electronic Commerce Research and Applications*, 8(3), 130-141.
- Liu, Y., Li, Y., Tao, L., & Wang, Y. (2008). Relationship stability, trust and relational risk in marketing channels: Evidence from China. *Industrial Marketing Management*, 37(4), 432-446.
- López-Nicolás, C., Molina-Castillo, F. J., & Bouwman, H. (2008). An assessment of advanced mobile services acceptance: Contributions from TAM and diffusion theory models. *Information & Management*, 45(6), 359-364.
- Luarn, P., & Lin, H. H. (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in Human Behavior*, 21(6), 873–891.
- Luo, X., Li, H., Zhang, J., & Shim, J. P. (2010). Examining multi-dimensional trust and multi-faceted risk in initial acceptance of emerging technologies: An empirical study of mobile banking services. *Decision support systems*, 49(2), 222-234.
- Maitah, M., Hodrab, R., and Melad, A. (2014). The Impact of Quality Management Practices on Firm's Performance an Empirical Investigation of Associated Constructs in Palestinian Information and Communication Technology Firms. *International Business Management*, 8(6), 312-326. <http://medwelljournals.com/abstract/?doi=ibm.2014.312.326>
- Maitah, M., Zidan, K., & Malec, K. (2015). The problems that encounter palestinian olive oil marketing. *Modern*

- Applied Science*, 9(1), 58-67. <http://dx.doi.org/10.5539/mas.v9n1p58>
- Mansaray, S., Maitah, M., Hes, T., Malec, K. (2015) Microfinance in Southeastern Sierra Leone International Business Management, 9(4), 498-507. <http://dx.doi.org/10.3923/ibm.2015.498.507>
- Mathwick, C., Rigdon, E., & Malhotra, N. (2001). Experiential value conceptualization measurement and application in the catalog and internet shopping environment. *Journal of Retailing*, 77(1), 39–53.
- McKnight, H., Choudhury, V., & Kacmar, C. (2002). Developing and validating trust measures for e-commerce: An integrative typology. *Information Systems Research*, 13(3), 334–359.
- Melville, N., Kraemer, K., & Gurbaxani, V. (2004). Review: Information technology and organizational performance: An integrative model of IT business value. *MIS quarterly*, 28(2), 283-322.
- Ministry of Telecom & Information Technology (2011). Licensed companies for 2011. Retrieved from <http://www.pmtit.ps/ar/index.php?p=main&id=743>.
- Ndubisi, N. O., & Sinti, Q. (2006). Consumer attitudes, system's characteristics and Internet banking adoption in Malaysia. *Management Research News*, 29(1/2), 16–27.
- Nov, O., & Ye, C. (2008, January). Personality and technology acceptance: Personal innovativeness in IT, openness and resistance to change. In *Hawaii International Conference on System Sciences, Proceedings of the 41st Annual*(pp. 448-448). IEEE.
- Nysveen, H., Pedersen, P., & Thornbjørnsen, H. (2005). Intentions to use mobile services: antecedents and cross-service comparisons. *Journal of Academy of Marketing Science*, 33(3), 330–346.
- Palestine Monetary Authority (PMA). Retrieved June, 2014, from <http://www.pma.ps/>
- Park, J., Yang, S., & Lehto, X. (2007). Adoption of mobile technologies for Chinese consumers. *Journal of Electronic Commerce Research*, 8(3), 196–206.
- Poon, W. C. (2008). Users' adoption of e-banking services: the Malaysian perspective. *Journal of Business and Industrial Marketing*, 23(1), 59–69.
- Ramayah, T. (2005). Course website usage among distance learning business students: The role of prior experience. *International Journal of Learning*, 11, 1507-1517.
- Ramayah, T. (2006b). Interface characteristics, perceived ease of use and intention to use an online library in Malaysia. *Information Development*, 22(2), 123–133.
- Ramayah, T., & Lo, M. Ch. (2007). Impact of shared beliefs on “perceived usefulness” and “ease of use” in the implementation of an enterprise resource planning system. *Journal of Management Research News*, 30(6).
- Ramayah, T., Ignatius, J., & Afaqi, B. (2005). PC usage among students in a private institution of higher learning: the moderating role of prior experience. *Educators and Education Journal*, 20, 131–152.
- Riquelme, H. E., & Rios, R. E. (2010). The moderating effect of gender in the adoption of mobile banking. *International Journal of Bank Marketing*, 28(5), 328–341. Rogers, E., 1962. *Diffusion of Innovations*, first ed. Free Press, New York, NY.
- Rizzuto, T. E., Schwarz, A., & Schwarz, C. (2014). Toward a deeper understanding of IT adoption: A multilevel analysis. *Information & Management*, 51(4), 479-487.
- Rizzuto, T. E., Schwarz, A., & Schwarz, C. (2014). Toward a deeper understanding of IT adoption: A multilevel analysis. *Information & Management*, 51(4), 479-487.
- Santouridis, I., & Kyritsi, M. (2014). Investigating the Determinants of Internet Banking Adoption in Greece. *Procedia Economics and Finance*, 9, 501-510.
- Sathye, M. (1999). Adoption of internet banking by Australian consumers: an empirical investigation. *International Journal of bank marketing*, 17(7), 324-334.
- Sathye, M. (1999). Adoption of internet banking by Australian consumers: an empirical investigation. *International Journal of Bank Marketing*, 17(7), 324–334.
- Seddon, P. (1997). A respecification of the DeLone and McLean Model of IS success. *Information Systems Research*, 8(3), 240–253.
- Shah, M., & Clarke, S. (2009). E-Banking Management: Issues, Solutions.
- Suh, B., & Han, I. (2003). Effect of trust on customer acceptance of Internet banking. *Electronic Commerce research and applications*, 1(3), 247-263.

- Sundarraaj, R., P., & Wu, J. (2005). Using information-systems constructs to study online and telephone-banking technologies. *Electronic Commerce Research Applications*, 4(4), 427-443
- Tan, K. S., Chong, S. C., Lin, B., & Eze, U. C. (2009). Internet-based ICT adoption: evidence from Malaysian SMEs. *Industrial Management and Data Systems*, 109(2), 224-244.
- Tan, M., & Teo, T. (2000). Factors influencing the adoption of internet banking. *Journal of the Association for Information Systems*, 1(5), 22-38.
- Taylor, J. W. (1974). The role of risk in consumer behavior. *Journal of Marketing*, 38(2), 54-60.
- Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: development and test. *Decision Sciences*, 27(3), 451-482.
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies. *Management Science*, 46(2), 186-204.
- Wang, Y. S. (2008). Assessing e-commerce systems success: a respecification and validation of the DeLone and McLean model of IS success. *Information Systems Journal*, 18(5), 529-557.
- Wang, Y. S., & Liao, Y. W. (2007). The conceptualization and measurement of m-commerce user satisfaction. *Computers in Human Behavior*, 23(1), 381-398.
- Wang, Y. S., Lin, H. H., & Luarn, P. (2006). Predicting consumer intention to use mobile service. *Information Systems Journal*, 16(2), 157-179.
- Wang, Y. S., Tang, T. I., & Tang, J. T. E. (2001). An Instrument for Measuring Customer Satisfaction Toward Web Sites That Market Digital Products and Services. *J. Electron. Commerce Res.*, 2(3), 89-102.
- Wessels, L., & Drennan, J. (2010). An investigation of consumer acceptance of M-banking. *International Journal of Bank Marketing*, 28(7), 547-568.
- White, J., Saul, J., & Davenport, C. (2012). Cisco Pioneers Market Development Approach in Palestine. Retrieved from http://missionmeasurement.com/uploads/documents/Cisco_Pioneers_Market_Development_Approach_in_Palestine_-_White_Paper_by_Mission_Measurement.pdf
- Wiedemann, D. G., Haunstetter, T., & Pousttchi, K. (2008, July). Analyzing the basic elements of mobile viral marketing-an empirical study. In *Mobile Business, 2008. ICMB'08. 7th International Conference on* (pp. 75-85). IEEE.
- Wu, J. H., & Wang, S. C. (2005). What drives mobile commerce?: An empirical evaluation of the revised technology acceptance model. *Information & management*, 42(5), 719-729.
- Yang, A. S. (2009). Exploring adoption difficulties in mobile banking services. *Canadian Journal of Administrative Sciences*, 26(2), 136-149.
- Yousafzai, S. Y., Pallister, J. G., & Foxall, G. R. (2003). A proposed model of e-trust for electronic banking. *Technovation*, 23(11), 847-860.
- Zhao, A. L., Hanmer-Lloyd, S., Ward, P., & Goode, M. M. (2008). Perceived risk and Chinese consumers' internet banking services adoption. *International Journal of Bank Marketing*, 26(7), 505-525.
- Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Computers in Human Behavior*, 26(4), 760-767.

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